

# *California Needs Zero Emissions Technology*

California is the 5<sup>th</sup> largest economy in the world - an economy that runs on fuel. California has a population of over 35 million people, driving over 24 million registered motor vehicles, and consuming 16.4 billion gasoline equivalent gallons a year of gasoline and diesel per year. By 2020, it is possible that 45.5 million Californians will have 31.5 million registered vehicles consuming 24.2 billion gasoline equivalent gallons of gasoline and diesel per year. A healthy California depends on secure, affordable and environmentally responsible transportation fuels.

All Californians, especially the elderly and the very young have the right to live, work and play in an environment free from harmful air pollutants. Maintaining clean air is the mission of the California Air Resources Board. In the last 30 years industry and government have worked together to advance new technologies such as catalytic converters, fuel injection systems, on-board computers and electric drive vehicles. The air is cleaner, but California still has five of the top ten cities with the worst air pollution in the U.S. Growth will continue, and technology must advance - California needs zero emissions technologies in transportation and power generation sectors to protect public health.

Fuel cell and hydrogen technologies have made substantial progress in the last decade and are now positioned to make significant improvements in efficiency and reductions in urban, regional and global pollutions.

Applications for fuel cells may be endless. In the transportation sector, they can power light, medium and heavy-duty vehicles such as cars, trucks and transit buses. They can run marine vessels and operate as auxiliary power units. In stationary and/or distributed power applications, they can be used in homes and office complexes. They can be back-up generators in remote areas and supply hot water to heat buildings. Portable applications include powering lawn mowers, power tools, computers, cameras and cell phones.

Hydrogen, which is ideally used in fuel cells, can also be used in internal combustion engines, either as a neat fuel or in mixtures with natural gas. Hydrogen is a non-carbon fuel that can be produced from a

variety of sources including fossil fuels, alternative fuels and renewables. Such diversity of feedstocks is a significant asset. As stated in the Governor's Action Plan, "Several leading auto manufacturers have stated that they can have tens of thousands of competitively priced hydrogen fuel cell cars on the road by the end of this decade if the fueling infrastructure were available. I [Governor Schwarzenegger] will create a public-private partnership to ensure that before 2010, California has a network of stations in place to allow motorists a real choice of cleaner fuels to put in their tank."

Full commercialization of fuel cells may be years away. Costs need to come down. Fuel cell manufacturers, government agencies, fuel suppliers and utilities must work together to support pilot and demonstration projects. Smart public policy in the form of incentives, mandates and regulations should be developed to help spur continued progress. And finally, public private partnerships need to be formed and maintained to help ensure that critical lines of communications and cooperation remain amongst all parties.

This resource guide is meant to be a "living" document. The primary purpose is to catalog companies and organizations working to facilitate the development and deployment of hydrogen and fuel cell technologies in the State of California. Hopefully, the guide will be used to identify opportunities for job creation and networking. We must be courageous. The challenges are significant, but surmountable, while the rewards will be great.



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